

0051526

Analytical Data Package Prepared For

Bechtel Hanford

Analysis By

Quanterra Analytical Services

Richland Laboratory

Report Nbr: 7931

SDG No.

SAF No.

CLIENT ID No.

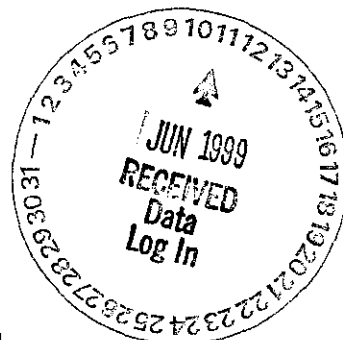
QUANTERRA ID No.

W02784

B99-001

B0TBD4

----- 9CW3XE10



Comments:

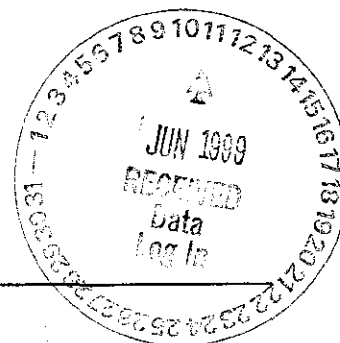
0001

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

June 11, 1999

Attention: Joan Kessner



SAF Number	:	B99-001
Date First Sample Received	:	May 21, 1999
Number of Samples	:	One
Sample Type	:	Soil
SDG Number	:	W02784
Data Deliverable	:	3-Day Priority/15 Day Summary

I. Introduction

On May 19, 1999, three soil samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

<u>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9CW3XE10	B0TBD4	Soil	5/21/99

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analysis was: **Hexavalent Chromium**
Hexavalent Chromium by EPA7196

III. Quality Control

The analytical results for the analysis performed under SDG W02784 include a minimum of one Laboratory Control Sample (LCS), one matrix spike (MS), one matrix spike duplicate

Bechtel Hanford, Inc.
June 11, 1999
Page 2

(MSD), and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

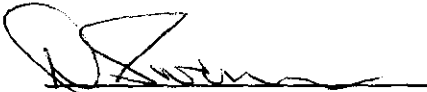
Hexavalent Chromium

Hexavalent Chromium by EPA7196

The LCS, MS, MSD, batch blank, and sample results are within the requirements of the contract.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

A handwritten signature in black ink, appearing to read "Doug Swenson", written over a horizontal line.

Doug Swenson
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02784 / 7931
LAB SAMPLE ID: 9CW3XE10 MATRIX: SOIL
CLIENT ID: B0TBD4 DATE RECEIVED: 5/21/99 1:25:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	4.00E-02	U	N/A	N/A	4.00E-02	mg/kg	N/A	EPA7196

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02784 / 7931
LAB SAMPLE ID: CW65C11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00		N/A	N/A	N/A	mg/L	N/A	EPA7196

Number of Results:

LABORATORY CONTROL SAMPLE**LAB NAME:** QUANTERRA, Richland **SDG: /RPT GRP:** W02784 / 7931**LAB SAMPLE ID:** CW65C12S **MATRIX:** SOIL

ANALYTE	RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	4.45E-01	N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	89.00%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02784 / 7931
LAB SAMPLE ID: CW65C13S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	4.34E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	86.80%

Number of Results:



Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): <i>CW3XE101</i> <i>QC Batch 9144187</i>				
Lab Sample Numbers or SDG: <i>WO 2784</i>				
Method/Test/Parameter: <i>CR46 in SOIL</i> <i>RICHWC5003 R.3</i>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters \leq reporting limit?	✓			
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			
2. CCB analyzed at required frequency and all results \leq reporting limit?	✓			
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?			✓	
2. Were all sample holding times met?	✓			
D. QC Samples				
1. All results for the preparation blank below limits?	✓			
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?			✓	
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

CHAIN OF CUSTODY FORMS

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-001-189		Page 1 of 1					
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code		Data Turnaround 3 Days			
Project Designation 100 BC Areas - Quick Turn		Sampling Location 100BC 116-B-10		SAF No. B99-001									
Ice Chest No. # 99-001		Field Logbook No. EL 1327-3		Method of Shipment Hand Delivered									
Shipped To Quanterra Incorporated		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A									
				COA R16B10 2F00									
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation		Cool 4C									
		Type of Container		aG									
		No. of Container(s)		1									
		Volume		60mL									
Special Handling and/or Storage													
SDG W02784		SAMPLE ANALYSIS J9E210223		Chromium Hex - 7196									
Sample No.		Matrix *		Sample Date		Sample Time							
BOTBD4 W3KE		Soil		5-19-99		0930		X					
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By R. Fahlberg		Date/Time 5-19-99		Received By R. Fahlberg		Date/Time 5-19-99		RA Fahlberg not available to sign over C.O.C.				Soil	
Relinquished By R. Fahlberg		Date/Time 5-19-99/1300		Received By Doug Powers		Date/Time 5-21-99/1300						Water	
Relinquished By Doug Powers		Date/Time 5-21-99/1325		Received By H. L. L. L.		Date/Time 5-21-99/1325						Vapor	
Relinquished By		Date/Time		Received By L. L. L. L.		Date/Time						Other Solid	
LABORATORY SECTION		Received By		Title						Other Liquid			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By						Date/Time			

ERC Radiological Counting Facility Analysis Report

RCF Number RCF3973Sample Date & Time 5/19/99 0930Project ID: 116-B-10SAF Number: B99-001Date Analyzed 5/19/99Sample ID: BOVD58

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	1.7E+01	+/- 2.2E+00	6.2E-01
Co-60	6.2E+01	+/- 1.8E+00	1.2E-01
Cs-137 #	< 1.6E-01		1.6E-01
Eu-152	2.9E+01	+/- 1.0E+00	3.8E-01
Eu-154	9.3E+00	+/- 4.8E-01	5.1E-01
Eu-155	1.1E+00	+/- 7.3E-01	4.1E-01
Th-232d	6.0E-01	+/- 2.3E-01	1.6E-01
U-235	< 7.3E-01		7.3E-01
Np-237	< 1.1E-01		1.1E-01
U-238	< 3.0E+01		3.0E+01
U-238d	7.3E-01	+/- 2.4E-01	2.6E-01
Am-241	< 1.6E-01		1.6E-01

B-10
NE corner
Near Floor
w/ QTL-T
QTL-Q

BOVDLS - TMA
BOTBD4 - QUANTERA

Total GEA (pCi/g)	1.2E+02	+/-	6.7E+00
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	Activity (pCi/g)	Error (pCi/g)
Gross Alpha**	< 1.4E-01	
Gross Beta	7.0E+01	+/- 3.2E+00

Alpha MDC (pCi/g)	1.4E-01
Beta MDC (pCi/g)	3.2E+01

Definitions:

All errors reported at 2 standard deviations.

N/R = no result or analysis not requested. <MDC = Less than detection limit.

All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.

Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pb-214m.

The analysis of Np-237 is based on the activity of Pa-233.

U-238d is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th-232d is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.

Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.

**The gross alpha results are not corrected for mass absorption

No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst Kathleen Robertson Re Thero 5/19/99

Report Printed: Wednesday, May 19, 1999

Post-It* Fax Note	7571	Date	5/19/99
To	Randy Coffman	From	K.A. Robertson-Re Thero
Co/Dept		Co	
Phone #		Phone #	373-9731
Fax #	373-9779	Fax #	

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 5-21 1320 SG#: W02784
Work Order Number: 09E210223 SAF #: B99-001
Shipping Container ID: 99-001 Chain of Custody #: B99-001-189

1. Custody Seals on shipping container intact? Yes [☒] No [☐]
2. Custody Seals dated and signed? Yes [☒] No [☐]
3. Chain-of-Custody record present? Yes [☒] No [☐] 40
4. Cooler temperature _____
5. Vermiculite/packing materials is Wet [☐] Dry [☒] Wet
6. Number of samples in shipping container: 21
7. Sample holding times exceeded? 5/21/99 Yes [☐] No [☒]

8. Samples have:
☒ tape ☐ hazard labels
☒ custody seals ☐ appropriate sample labels

9. Samples are:
☒ in good condition ☐ leaking
☐ broken ☐ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [☐] No [☒]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Hidellberg Date: 5-21-99
Telephoned To: _____ On _____ By _____

0013

COC Signature Page

Batch #: 914-4187

Initials/Date

Procedure #

Released By

ASWAA

RC0009

Received

(B) 5-24-99

RICHWC5003 R.3

Released By

(B) 5-25-99

n/a

Received

Released By

n/a

Received

Released By

n/a

Received

Released By

n/a

Received

Released By

n/a

Received

Released By

n/a

Received

RC-131, Rev.0, 8/98

0014

RQC050

Quanterra Incorporated
WET CHEM BATCHSHEET
RichlandRun Date: 5/24/99
Time: 10:52:42

PRODUCTION FIGURES - WET CHEM

<u>TOTAL NUMBER</u>	<u>SAMPLE NUMBER</u>	<u>QC</u>	<u>RE-RUN MATRIX</u>	<u>RE-RUN OTHER</u>	<u>MISC NUMBER</u>	<u>TOTAL HOURS</u>	<u>EXPANDED DELIVERABLE</u>
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METHOD: EA Hexavalent Chromium
QC BATCH #: 9144187
PREP DATE: 5/24/99
USER: ROSSR6A)
INITIALS:
PREP
ANALDATA ENTRY:
INITIALS
DATE

<u>Work Order</u>	<u>Lab Number</u>	<u>Structured Analysis</u>	<u>Exp. Del.</u>	<u>Analysis Date</u>	<u>Sample ID:</u>
CW3XE-1-01	J-9E210223-001	XX A 88 EA 5K			B0TBD4
CW65C-1-01	J-9E240000-187-B	XX A 88 EA 5K			INTRA-LAB BLANK
CW65C-1-02	J-9E240000-187-C	XX A 88 EA 5K			INTRA-LAB CHECK
CW65C-1-03	J-9E240000-187-L	XX A 88 EA 5K			INTRA-LAB CHECK

Control Limits

(85-115)

(85-115)

0015